

A.J. Eggenberger, Chairman
John E. Mansfield, Vice Chairman
Joseph F. Bader
Larry W. Brown
Peter S. Winokur

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700 Washington, D.C. 20004-2901
(202) 694-7000



January 23, 2009

The Honorable Thomas P. D'Agostino
Administrator
National Nuclear Security Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0701

Dear Mr. D'Agostino:

The Defense Nuclear Facilities Safety Board (Board) completed a review of nuclear criticality safety (NCS) evaluations for the Highly Enriched Uranium Materials Facility (HEUMF) at the Y-12 National Security Complex (Y-12). The review revealed that NCS evaluations for HEUMF failed to meet select requirements and potentially compromise the requisite safety margin for fissionable material operations. The enclosed report prepared by the Board's staff provides a detailed discussion of these shortcomings.

In particular, the Board's staff found that NCS evaluations for HEUMF failed to comply with requirements of applicable American National Standards Institute (ANSI)/American Nuclear Society (ANS) consensus standards, Department of Energy (DOE) directives, and Y-12 NCS program procedures in two major areas. First, some credible abnormal conditions for operations were not analyzed and shown to be subcritical because the double contingency principle was misapplied. Second, upset conditions deemed unlikely to occur do not meet the definition of "unlikely" found in both DOE Standard 3007-2007, *Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities*, and Y-12 NCS program procedures.

An NCS review conducted by the National Nuclear Security Administration (NNSA) in May 2008 revealed similar deficiencies. NNSA's report was finalized in late August 2008. The Board understands that the Y-12 Site Office (YSO) has already taken action to address some noncompliances identified during NNSA's review and has directed the Y-12 contractor to ensure that HEUMF NCS evaluations comply with DOE Standard 3007-2007 prior to the start of operational readiness reviews for HEUMF. Y-12 has also submitted a revised Implementation Plan for DOE Standard 3007-2007 to YSO, which addresses other items from the NNSA review. However, the revised Implementation Plan does not address the issues discussed in the enclosed

report. The Board is concerned that these issues may exist in other Y-12 facilities, beyond those cited in the enclosed report, and may have broader implications.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a briefing within 90 days of receipt of this letter to cover the following topics: (1) actions taken or planned to address the staff's observations in the enclosed report, and (2) results of any extent-of-condition evaluations performed to determine whether other Y-12 NCS evaluations meet applicable requirements.

Sincerely,

A handwritten signature in dark ink, appearing to read "A. J. Eggenberger". The signature is fluid and cursive, with the first name "A. J." written in a more compact, stylized manner.

A. J. Eggenberger
Chairman

Enclosure

c: The Honorable William C. Ostendorff
Mr. Theodore D. Sherry
Mr. Mark B. Whitaker, Jr.